

Stone (A. J.)

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induced by the Administration
of Anæsthetics.

BY ALEXANDER J. STONE, M.D.,
Assistant in Practice to Prof. HORATIO R. STORER.

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ON BROMIDE OF POTASSIUM, AS COUNTERACTING THE NAUSEA ATTENDING ETHERIZATION.

IN bringing before the profession an important and apparently new property of the bromide of potassium, it was at first my intention to present some details of its history, and its physiological effects upon man and beast; but I have before me the *Richmond Medical Journal* for January, 1868, in which there is an article by Dr. A. M. Fauntleroy, so able and comprehensive as to render any general remarks by myself quite unnecessary. I therefore shall confine myself to an exposition of its use in the relief of the nausea and other disagreeable effects attendant upon the inhalation of ether. As will be seen by reference to Case I. of those that I give, I owe whatever credit may attain from this discovery to Prof. H. R. Storer, who suggested it to me, and under whose advice I have worked the matter up.

There may be those who are unaware of the large percentage of cases in which there is great functional derangement of the stomach after anæsthesia. My friend Josiah Hale, House-surgeon at the Massachusetts

General Hospital, informs me that at that institution the nausea is invariable after the inhalation of ether, while nine tenths of the patients vomit freely. The results at Bellevue and Charity Hospitals of New York are ascertained to be the same. Prof. W. H. Pancoast, of Philadelphia, in a conversation which I had with him last winter, bore testimony to the same facts in his own city, and surgeons everywhere have recognized it as the great objection to the use of ether as an anæsthetic. In fact, its extreme disagreeableness in this respect (which the more pleasant chloroform to a certain extent shares) to both the patient and physician, has been the motive which induced the indefatigable Richardson to urge upon the profession the employment of local, rather than general anæsthesia, and in case the latter is resorted to, the use of tetrachloride of carbon and bichloride of methylin in preference to other agents. These unpleasant effects have, I fear, frequently rendered the attending physician guilty of inexcusable neglect in the non-administration of an anæsthetic to the woman in travail, and, I doubt not, too often caused the employment of that more dangerous drug chloroform, in general and minor surgery, and in dentistry, with a consequent loss of many valuable lives.

I had at first some little hesitation lest I might be presenting as new, an idea that had already been tested by experiment. I thought

that if the subject had ever been broached, Prof. C. E. Brown-Séquard, to whom is undoubtedly due all the credit of bringing the drug into popular use; Prof. Edward H. Clarke, of the chair of Materia Medica in the Harvard Medical School; Dr. James R. Nichols, from his extensive relations with the medical profession as a manufacturing chemist; or Prof. Austin Flint, Jr., so well known as a physiologist, would have heard of it. I accordingly wrote to the above-named gentlemen, and quote from their respective answers.

Prof. Brown-Séquard says:—"I do not know positively whether the bromide of potassium has or has not been employed against nausea. I do not think it has been used to that end, and I doubt that it would often prove efficacious."

It will be noticed that here the doubt is expressed as to its efficacy "against *nausea*." I do not claim that it will relieve the nausea dependent upon an irritation, mechanical or otherwise, *within* the stomach; but that, through its action upon the base of the brain, the posterior columns of the spinal cord and accessory nerves, it may control certain nauseas of the stomach arising from sympathy, as in the instance where ether is conveyed to the nervous system through the lungs. Whether it may, in the same manner, control reflex nausea in the case of sea-sickness or pregnancy, are questions yet to be solved.

Prof. Clarke writes as follows:—"From the ascertained physiological action of the bromide on the brain, it would be fair to infer that it might control the nausea attendant on the inhalation of ether, but I am not aware that any one has yet used it for that purpose."

From the letter of Dr. James R. Nichols, I take this extract:—"I have never known of the bromide of potassium being used for the relief of the nausea attendant upon the inhalation of ether. I think that with our extended personal intercourse and correspondence with physicians in all sections, we should have learned of its employment for the purposes stated had it been so employed."

Prof. Flint very kindly looked the matter up, and writes:—"I have never heard of bromide of potassium as a remedy for the nausea consequent upon the administration of ether. I delayed a day or two in replying to your note, in order to make inquiries among those whom I thought would be likely to have heard of such a thing, if it was done in New York, but I have not seen any one who has ever used the remedy in question in such cases."

To fix my point certainly, I have carefully reviewed, so far as I have been able, the medical journals of this country, and the more prominent ones of Europe, and, though I find the drug frequently spoken of, and many hints thrown out as to its use

and abuse, I have never, even in the exhaustive treatise of Dr. Fauntleroy, above mentioned, found any hint which would lead one to the use now indicated. In presenting the following cases, I have borne in mind the doubtfulness of statistics, a doubtfulness so plainly shown in the variance between the experience of Dr. Johnson, of Boston, lately reported in the Boston Medical and Surgical Journal,* and my own. Dr. J. states that, in the past seven years, he has given it (the bromide) in more than a hundred cases, and in many (quoting cases) he has seen very peculiar results. In Prof. Storer's practice I have, within the past four months, been obliged to prescribe it for various symptoms attending uterine disease, such as insomnia, hysteria, epilepsy, and other forms of mental and nervous derangement, more than one hundred and fifty times, speaking within bounds, and with the single exception of the resulting acnoid eruption, which passes away voluntarily when the medicine is discontinued, I have been so fortunate as not to have seen any ill result, while Dr. Johnson, in his smaller series of cases, reports having seen several. Dr. Storer has been led, by advice from Dr. Brown-Séquard, to exhibit it in larger doses than is ordinarily given; his ordinary prescription being *potassii bromidi* \mathfrak{z} i. in *ch. no. xij.*, though in different cases the

* Loc. cit., January 16, 1868.

dose will vary from thirty to ninety grains. In case it is to be given after the use of ether, I would recommend the exhibition of either thirty or forty grains every thirty, forty-five or sixty minutes, as may be found advisable. It might seem that a remedy apparently so efficacious in *checking* the nausea, would act well as a prophylactic, and in one case I tried it with most pleasing results (or coincidence?). It has been my endeavor to have my patients as nearly resembling one another in hygienic condition as possible; always, when able, having ordered the patient to make the meal last preceding the etherization as light as possible, that the anæsthetic might be given upon an almost empty stomach. The operations have all been performed at about the same time of day, i. e. from 10, A.M., to 3, P.M. I have neglected to give the bromide, either as a prophylactic or remedy, in Dr. Storer's cases of section for ovarian tumor, or in other serious operations, since I have been with him, being unwilling to add to the already sufficiently great risks of the operation, those of the possible unfavorable symptoms resulting from the use of the drug, as described by Dr. Johnson, either of which might turn the scale against the patient. I am inclined to think, however, from the results of a somewhat extended series of experiments made with this drug by Dr. Storer upon himself, and communicated to me, that

there is little or no risk of gastric, nervous or other irritation from its use, even in doses that might seem enormous, provided the bromide is exhibited in at least twice the amount of water required to dissolve it.

There are many points of value and interest which have arrested my attention in witnessing Dr. Storer's manner of exhibiting ether, and of preparing the patient for it, in his almost daily employment of anæsthesia for operations, and it seems to me that the general practice of surgeons could be radically changed for the better. I may at some future time speak of this point at length.

The following instances will be found illustrative of the effects I have described from the use of bromide of potassium. As will be perceived, they are not selected cases.

CASE I.—Wednesday, October 9th, 1867, Miss —, of Utica, N. Y., 21 years of age. Never taken ether. After applications of *potassa fusa* a year since, by a well-known surgeon, quite firm bands of adhesion had been formed from the anterior and left side of the cervix to the vaginal wall, which bands held the uterus in a lateral retroversion. To right the womb, and relieve the patient of the disagreeable symptoms usually attendant, Prof. Storer decided to sever these bands. Accordingly, I administered the ether in about fifteen minutes, and

the operation was quickly performed, with Atlee's guarded knife. After the operation, Dr. Storer requested me to prescribe potassii bromidi ℥ss. in ch. no. vi., one powder to be taken hourly, commencing when there was sufficient reaction from the ether, with the hope of quieting her nervous, hysterical state. She took the first powder at 4, P.M. When I saw her in the evening, she had taken the six prescribed, and, to my surprise, told me that she had experienced no nausea since taking the first, and requested permission to drink a cup of tea. On seeing her the following morning with Prof. Storer, he connected the non-appearance of the almost invariable symptom with the exhibition of the drug, and advised me "to work up the point carefully, as it might prove of some importance."

CASE II.—Thursday, Oct. 10th. Mrs. —, of Cambridge, æt. 43. Never taken ether. Was very nervous, and usually easily nauseated. Ate a light breakfast. I occupied some fifteen minutes in the etherization. Prof. Storer then evacuated a large cyst of one of the labia. The cyst having been laid open by a free incision, its wall was dissected up, and the wound kept open by a cotton tent, with the hope of getting union from the bottom, and thus an obliteration of the sac. The ether was then removed, about forty-five minutes after its first inhalation, and the patient allowed to regain

sensibility. In about half an hour, she had partially reacted, and though somewhat delirious, complained of great nausea and a desire to vomit. I gave thirty grains of the bromide dissolved in half a tumbler of water, and repeated the same in half an hour. I then left, with orders to give her two powders (ãã gr. xxx.) during the evening, with narceine gr. $\frac{1}{4}$. There was no vomiting, and no farther complaint of nausea.

CASE III.—Friday, Oct. 11th. Miss G., of Illinois, æt. 20. Never taken ether. Had eaten a hearty breakfast. Not easily nauseated. Extremely nervous. Etherization occupied ten minutes. Dr. Storer then removed several fringes or outgrowths from the vulva, also two external hæmorrhoids, and ruptured the sphincter ani for the cure of a small fissure or linear ulcer. The ether was removed in about thirty minutes. Her uncle, a physician, being present, I requested him to give the bromide in thirty-grain doses hourly, three times. He kindly consented to do so, and, in answer to my inquiries that evening, reported that she had felt some nausea, but did not vomit.

CASE IV.—Friday, Oct. 18th. Mrs. L., Roxbury, æt. —. Had never taken ether. Ate a light breakfast. Very nervous. Etherized her thoroughly in twenty minutes. Prof. Storer performed hysterotomy for the relief of sterility. A flexible block-

tin bougie having been left in the cervical canal and the vagina plugged, the ether was removed, and in half an hour thirty grains of the potassium administered, being repeated twice at intervals of forty-five minutes. The nausea, which was at first felt, was entirely relieved.

CASE V.—Friday, Oct. 25th. Mrs. P. A., of Brooklyn, N. Y. Had taken ether twice, each time with great hysteria, much nausea and vomiting. Etherization commenced at 11, A.M. She was rendered completely insensible in fifteen minutes. Prof. Storer then removed three large external hemorrhoids by the ecraseur, and two or three smaller internal ones with scissors; also ruptured the sphincter ani, to prevent the great tenesmus usual after the operation, and the possibility of concealed hemorrhage. She was kept fully etherized about an hour, during which time she vomited once. About twenty minutes after the removal of the ether, I gave her bromide of potassium, gr. xl., dissolved in about two ounces of water, and morph. sulph. gr. $\frac{1}{4}$ every half hour, till sleep was finally attained after the exhibition of morphia gr. i. There was no vomiting, though slight nausea, after the exhibition of the potassium.

CASE VI.—Saturday, Oct. 26th.—Miss —, Northboro,' æt. 28. Had never taken ether. Gave it at 10.15 A.M. She was

completely under the anæsthetic in ten minutes. Dr. Storer then operated for sharp, double anteflexion, by Emmet's method, slitting up the cervix posteriorly with scissors, and cutting the sharp flexion anteriorly with Emmet's universally jointed knife. The operation was completed, and the ether removed in thirty minutes. A few minutes afterwards, I gave the patient twenty grains of the bromide and left her. There was vomiting two or three times.

CASE VII.—Saturday, Oct. 26. Miss Mary B——, Boston, æt. 40. Never taken ether. Eaten lightly. Very nervous. Ether given, and vulval fringes removed by Dr. Storer, to check the hæmorrhage from which, one of Sims's glass dilators was introduced. Gave eighty grains in three hours. There was great nausea which was decidedly relieved, and no vomiting.

CASE VIII.—Tuesday, Nov. 5. Miss M. H., Chicago, æt. 22. Never taken ether; occupied twenty minutes in administering it. Prof. S. then incised an occluded hymen, for the purpose of making a vaginal examination, the patient having been unsuccessfully treated by general measures at the hands of other physicians. The ether was taken away at the expiration of thirty minutes. Free emesis at once. As soon as she was able to swallow readily, forty grains of the bromide was given in an ounce of water.

and immediately thrown from the stomach. In half an hour, forty-five grains were given in about two ounces of water, and rejected at once. In an hour, sixty grains were given in two ounces of water; this the stomach retained about fifteen minutes, and then threw up. The bromide was then discontinued, and the various ordinary remedies resorted to. Carbolic acid in two-drop doses (sat. sol.), pieces of ice by the mouth, ether by mouth in drachm doses, ice at the epigastrium and sacrum, and all without avail, the extreme nausea continuing till the next forenoon. A double rocker pessary (Hodge) was introduced for retroversion, and the patient, who had not left her room before for four months, with but two exceptions, walked with ease a half mile and back, passing three flights of hotel stairs, on the tenth day after the operation.

CASE IX.—Friday, Nov. 8th. Mrs. E. B., of North Adams, æt. 26. Had taken ether several times, with invariable emesis. Gave the ether at about 11 o'clock, A.M., occupying some fifteen minutes. Prof. Storer operated for vaginismus (Sims' operation) by a Y-shaped incision on the floor of the vagina. A large glass dilator was introduced, to prevent the severed nerves from re-uniting. On regaining sensibility, she vomited once. Gave thirty grains in half a tumbler of water, which was also

rejected. Gave thirty grains in a tablespoonful of water, with two drops of creasote; this the stomach retained one hour and then rejected. I repeated the same in half an hour and the stomach retained it, though the patient slept but little through the night, and complained much of nausea.

CASE X.—Saturday, Nov. 9th. The same. The removal of the dilator and its attempted replacement were attended with so much acute pain, that at the patient's earnest request I administered ether for the accomplishment of the latter. As soon as she could swallow easily, I gave sixty grains of the bromide, followed in an hour by thirty grains. No vomiting, but slight nausea.

CASE XI.—Sunday, Nov. 10th. Same. For replacement of the glass. Still very nervous. I occupied some thirty minutes in giving the ether. Gave ninety grains of bromide of potassium in divided doses, in three hours. Some nausea at first; no vomiting. The drug seemed to relieve the nausea quickly, and she ate a hearty dinner four hours afterwards.

CASE XII.—Monday, Nov. 11th. Same. The patient took voluntarily, without advice, one powder of thirty grains, some thirty minutes before taking the ether. Gave her thirty grains soon after removing the ether. No nausea.

CASE XIII.—Same. Had eaten a hearty meat dinner. I gave the ether some two hours after the meal. Gave ninety grains of the potassium, with narceine gr. i., in divided doses, in one hour and a half, and followed with narceine gr. ij. in ch. no. viij., one every half hour in a teaspoonful of water. No nausea, save very slightly at first.

CASE XIV.—Saturday, Nov. 16th. Same. Gave ninety grains of the bromide in three hours, with relief of the nausea; no vomiting.

CASE XV.—Thursday, Nov. 21st. Mrs. P., of Milford, æt. 30. Had taken ether before. Gave it in about ten minutes. Prof. S. opened and discharged a labial cyst of some twelve years standing, dissecting out the cyst wall and applying the actual cautery. Kept her under the ether half an hour. Vomited once, freely, during the operation. Gave thirty grains of the potassium in about two ounces of water. Repeated three times, at intervals of an hour. No more vomiting, and but slight nausea.

CASE XVI.—Monday, Nov. 25th. Mr. J., of Boston, æt. 18. Had never taken ether. Had eaten heartily about an hour and a half before coming to the office. I gave the ether in about twenty minutes,

and then operated for phymosis, cutting with my "blind knife" the constricted bands of the prepuce, dividing through the mucous surface only, and leaving the integument entire. He vomited severely during the operation. Gave about fifty grains of the bromide, with arrest of the vomiting, and, within an hour, of the nausea.

CASE XVII.—Thursday, Nov. 28th. Mr. F. W. S., of Boston, æt. 17. Never taken ether. Ate no breakfast. Gave ether in seventeen minutes. Cut down over the first metacarpal bone, and continued my incision subcutaneously over the surface of the trapezius, evacuating about half an ounce of laudable pus. Vomited freely during the operation. Gave thirty grains of the potassium, and repeated in half an hour. No more vomiting. Ate a hearty supper.

CASE XVIII.—Friday, Dec. 6th. (Case II.) Mrs. G., of Cambridge. Gave ether at 10.50, A.M., occupying about twenty minutes. Prof. Storer commenced the operation for artificial perinæum at 11.50, performing it in a new manner, using no superficial stitches, but bringing the extremities of the wire trusses, to which his deep metallic sutures were applied, together in such a way as to closely approximate the lips of the wound. Vomited freely dur-

ing the operation. Gave bromide in forty-grain doses half hourly, for three doses, and then hourly till six o'clock. Complained some of nausea, but no more vomiting.

CASE XIX.—Tuesday, Dec. 3d. Miss S., Boston, æt. 42. Had taken ether twice before, with great nausea attendant. Spurious ankylosis of right shoulder, dependent upon uterine disease. Occupied about twenty minutes in the etherization, and maintained its influence for half an hour. The shoulder was found to move very freely. As I removed the ether, there was free emesis. Had eaten a hearty breakfast. Gave forty grains in an ounce of water without relief; a second dose had the desired effect, and she rode home from the office in an hour and a half.

CASE XX.—Thursday, Dec. 12th. Miss —, of Montpelier, Vt., æt. 20. Had taken ether two or three times previously, with invariable emesis. She yielded to its influence in about fifteen minutes, and Prof. S. incised freely an occluded hymen. I maintained its influence about twenty minutes. Soon after reaction was established, I gave thirty grains, and repeated six times at intervals of half an hour. At first there was great nausea, no vomiting. The former yielded in about an hour and a half, and at 5 o'clock the patient ate a hearty

dinner, retaining the same on the stomach without nausea. Took, voluntarily, thirty grains at 9 o'clock, and had a quiet night.

CASE XXI.—Thursday, Dec. 26th. Mrs. M., of New York. Gave the ether in ten minutes. Prof. S. removed some hæmorrhoids, leaving one in the hope that the contraction following the operation might render its removal unnecessary. Removed the anæsthetic in ten minutes. Prescribed potass. bromide, ℥ij. in ch. no. iij., one every half hour. Some nausea, no vomiting.

CASE XXII.—Friday, Dec. 20th. (Case XIX.) Miss S., of Boston. Gave the ether again, having Dr. Francis C. Ropes and Prof. J. G. Pinkham in consultation, with reference to the condition of the shoulder. Vomited while in profound anæsthesia; during the reaction, I gave ninety grains, in divided doses, within an hour and a half. No more emesis. Was able to ride home from office with comfort.

CASE XXIII.—Thursday, Dec. 26th. Mrs. F., of Taunton, æt. 56. Never taken ether. Had eaten a hearty dinner. Occupied twenty minutes in producing anæsthesia. Opened a whitlow on the last phalanx of the first digit. Gave thirty-grain doses every hour (150 grs.). Some slight nausea, no vomiting.

CASE XXIV.—Monday, Dec. 30th. Mrs. D., of New Bedford, æt. 45. Never taken ether. Was etherized in ten minutes. Prof. Storer removed some hæmorrhoids, rupturing the sphincter ani, and applied ferri perchl. Ordered pot. br. \mathfrak{z} i. in ch. no. xij. One powder every half hour till the stomach became quiet. Called again in the evening, and found that she had taken two of the powders, but disliking their taste had discontinued them. No vomiting, though some nausea.

CASE XXV.—Monday, Dec. 30th. (Case XXIII.) Mrs. F., of Taunton. Gave ether in about fifteen minutes, and removed a small portion of the last phalanx of thumb, which was slightly carious, and with a tenotomy knife extended my former incision subcutaneously to the palmar fascia. Also incised by the side of the nail, hoping thereby to save its matrix. She came out of the ether with considerable hysteria, and at first refused to take the medicine. In the course of half an hour, I had persuaded her to take forty grains dissolved in half a cup of water, and repeated in half an hour. Here the bromide acted as a very powerful sedative, the patient falling asleep immediately after the last dose, and sleeping quietly for more than four hours, waking up as though from a natural sleep, with none of the disagreeable effects of the ether, save its taste, which remained in the

mouth. I gave, with a lemon, two drops of a saturated solution of carbolic acid, with the effect of relieving the taste. Took a light supper of tea and toast, and one more powder (40 grs.) on retiring. Slept quietly. In the night, awoke with a feeling of weight at the epigastrium and nausea. Voluntarily took one powder, and at 10 ate a light breakfast (in bed). At 2, P.M., ate quite a hearty dinner.

CASE XXVI.—Sunday, Jan. 12th, 1868. Mrs. S. P. A., of Brookline, æt. 29. Never taken ether. Ate a good breakfast, not expecting the operation. Occupied about fifteen minutes in giving the ether. Prof. Storer then removed a small fibroid tumor from the anterior wall of the cervix, and applied both ferri perchl. and the actual cautery. I then packed the vagina, and ordered potassii bromidi \mathfrak{z} i. in ch. no. x. Three powders to be taken in an hour and a half, and one every half hour afterward, if required. Before the administration of the drug, there was much nausea and vomiting, which the first powder seemed to allay. Ate a light supper, and slept quietly.

CASE XXVII.—Thursday, January 16th. (Case XXI.) Mrs. M., of New York. Very hysterical. Occupied some fifteen minutes in giving the ether. Prof. Storer removed a hæmorrhoid which he had allowed to remain at a former operation, but which was

now occasioning discomfort. She vomited during the operation. I gave her forty-five grains of the bromide in a sherry-glass of water, and in a few minutes, to use her own expression, she "felt much easier."

CASE XXVIII.—Saturday, January 25th. Mrs. C. F. W., æt. —. Had taken ether several times. Was very nervous and hysterical. Occupied some fifteen minutes in etherizing her. Dr. Storer removed some outgrowths around the urethra and vulva, and several hæmorrhoids, and ruptured the sphincter ani. She came out of the ether very slowly, with great nausea and vomiting. Took ninety grains in an hour, with decided relief.

CASE XXIX.—Thursday, January 30th. Mrs. Anna W., of Roxbury. Had taken ether several times. Gave it in about fifteen minutes. Dr. Storer then removed some metallic wires which were purposely left after an operation a year since, for ruptured perinæum, to act as splints. On sufficient reaction, she took forty grains of the bromide, with a cessation of the nausea. By accident, she was overlooked, and in about two hours the nausea returned so severely that she vomited twice. A second dose of forty grains quieted the stomach, and a third dose brought a quiet sleep.

CASE XXX.—Sunday, Feb. 2d. Miss Kate W., of Chelsea. Had taken ether and chloroform, equal parts, once. Gave the ether in twenty minutes, and without occasioning hysteria. Prof. Storer removed some irritable fringes from the vulva. Removed the ether in twenty minutes. Some vomiting while in profound anæsthesia. Bromide of potassium, thirty grains, seemed to quiet the nausea without a repetition of the dose.

The drug which we have been considering is of such universal interest, that I believe there are many who would like to review such articles as have been written upon it. I here append a list of those articles and notices that I have found most valuable, viz.:—London Lancet, Jan. 23, 1860, May 28, 1864; Le Mouvement Médicale, Paris, Août, 1867; Journal de Med. Mentale, Paris, No. 5, Juin, 1867; Revue de Thérapeutique Med. et Chir., Paris, Juin 15, 1867; Bulletin de Thérapeutique, Août, 1866; Comptes Rendus, Ans 65-67; Pereira's Materia Medica and Therapeutics, 1852. American Journal of the Medical Sciences, January, 1855; April, 1855; January, 1867; July, 1867; October, 1867.

